

# Finish MPLS; Intro to VPN Services

## Agenda

- Exam dates (and note adjustment to term dates due to Wed snow storm!)
  - **SBA: Sat April 13**; 2.5 hrs; groups posted on BrightSpace by Mar 30
  - **Theory exam: Mon April 15 @ 2pm**; 3 hrs; (room TBC)
- Term Test #2: **Wed March 13 @ 4pm**, room **CA412**
  - covers all lecture & lab material up to and including Mon Mar 11
  - skip Module 5 slides 93-140 (details of Bandwidth constraints)
- Reminder of Nokia field trip: next Tue Mar 5 12:30-4:00pm 600 March Rd
  - organize car-pooling; leave Carleton immediately after NET3004 lab
- Any questions from Test #1?
- New Material:
  - Be conscious of distinguishing between "describing" and "activating"
  - TE options for parallel links: "mostly" vs "always" one link of a set (think main brand vs off-brand and implications for bandwidth & SLA!)
- Complete material from Module 5:
  - Section 5 – MPLS shortcuts: IGP & BGP shortcuts, 6PE, LDP-over-RSVP
  - (We'll save Module 6 for later in the semester)
- Start VPN Services: SA Module 1; NRS-II Ch 17
- In The News: <https://mobile.slashdot.org/story/19/02/23/2323227/nyt-reporter-ditched-my-phone-and-unbroke-my-brain>

## Assignments and Lab work

- Read: SA Module 1 by Mon Mar 4
- Read NRS-II book: Chapter 17 by Mon Mar 4
- Lab 6 post-lab: due = 11:59pm Thu/Sat for Fri/Mon lab sections
- Lab 7: IPv6 over MPLS (NRS-II Lab 13.4)
- (Coming next) Lab 8: SA Lab 2: basic Epipe / VPWS service

## Uses for Label Switching

- LDP or RSVP shortcuts for forwarding regular IP traffic
- LDP or RSVP shortcuts for resolving BGP next-hops
- LDP for creating IPv6 tunnels across IPv4-only MPLS networks
- **RSVP-TE for TE**, possibly with LDP-over-RSVP

# **–VPN Services at L1, L2, L3!!!**

Since this last one is so exciting, we'll take our first peek into SA in lecture today.

## SA Terminology

Module 1, section 3 (p. 42-66) introduces *lots* of new terminology. It is summarized here for convenient reference (... and possible testing in quizzes).

Term	Scope	Description
Customer or Subscriber	local; unique	Mandatory; numeric ID for purposes of management, billing, and reporting; ALL services under some ID
Service ID	local; unique	Unique numeric ID which identifies a specific service; either purely local (1 router) or distributed (>1 router); specified as: X-pipe, VPLS, VPRN, IES, mirror
Service Access Point ( <b>SAP</b> )	local; multiplex	The port where the customer connects, eg. 1/1/1 port mode <b>must</b> be "access" (default = "network")
Svc Distribution Point ( <b>SDP</b> )	local; multiplex	A numeric ID that corresponds to a uni-directional tunnel to carry 1+ services; end point is a system ID; configured to use LDP (shortest) or RSVP (longer); services use SDPs in spoke or mesh mode (TBA)
Virtual-Circuit (VD-ID)	GLOBAL	Numeric ID that <b>must</b> be globally identical; for human sake, make equal to service ID

Despite the fact that *only* the VC-ID is globally significant, you'll notice on slide 66 that the recommended best practice of also making Customer ID and Service ID globally unique!